

Marine Record

Cite this article: Souto LRA, Ross TEW, Sampaio CLS, Reis MdoSSdos, Bortolotto GA (2022). First record of sharksucker *Echeneis naucrates* (Perciformes, Echeneidae) associated with a young Guiana dolphin *Sotalia guianensis* (Cetartiodactyla, Delphinidae) in north-eastern Brazil. *Journal of the Marine Biological Association of the United Kingdom* 1–4. <https://doi.org/10.1017/S0025315422000637>

Received: 27 November 2021

Revised: 6 June 2022

Accepted: 18 July 2022

Key words:

Cetaceans; commensalism; ecology; fish; host-fidelity; interaction; marine mammal


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First record of sharksucker *Echeneis naucrates* (Perciformes, Echeneidae) associated with a young Guiana dolphin *Sotalia guianensis* (Cetartiodactyla, Delphinidae) in north-eastern Brazil

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Abstract

Suckerfish attached to dolphin species have been extensively reported worldwide, yet such association has been rarely seen in the tropical and shallow waters of South America. In Brazil, the Guiana dolphin *Sotalia guianensis* is distributed along almost the entire extent of the coast and only one case of association with suckerfish has been published. Here we report on a sharksucker *Echeneis naucrates* associated with a young Guiana dolphin on the north-eastern coast of Brazil. The juvenile dolphin with an attached sharksucker was observed on two occasions separated by a 47-day period; we hypothesize the occurrence of host attachment fidelity. The present report adds information to better discuss the ecological interactions between echeneids and dolphins, and expands the baseline information on cetacean species serving as host to suckerfish.

Introduction

Interactions between suckerfish (Echeneidae; Gray *et al.*, 2009) and other marine vertebrates (cetaceans, sirenians, turtles, teleost fish and elasmobranchs) are frequently observed around the world and commonly considered a type of commensalism (Sazima *et al.*, 1999; Fertl *et al.*, 2002; Williams *et al.*, 2003). Particularly for sea turtles, it has already been described as phoresis (i.e. ‘hitchhiking’, Williams *et al.*, 2003; Sazima & Grossman, 2006; Bachman *et al.*, 2018). Suckerfish associations with sharks of the family Carcharhinidae were recognized to have a potential negative nature (Ritter, 2002) and Brunnschweiler (2006) went further to suggest it can be a parasite–host relationship. In Brazil, cetacean–suckerfish associations and interactions have been observed for humpback whales *Megaptera novaeangliae* (Wedekin *et al.*, 2004), for bottlenose dolphins *Tursiops truncatus* (CLS Sampaio, pers. obs.), spinner dolphins *Stenella longirostris* (Silva & Sazima, 2003), and only one case of association with an adult Guiana dolphin *Sotalia guianensis*, in Cananéia Estuary, south-east Brazil (Santos & Sazima, 2005). Additionally, Wedekin *et al.* (2004) described a rough-toothed dolphin *Steno bredanensis* preying on an echeneid in the eastern Brazilian coast. The record was made while researchers followed humpback whales in the Abrolhos Bank (16°40’S 038°50’W), and the fish was likely attached to one of the whales before being preyed. Since records of suckerfishes associated with marine mammals in Brazilian coastal waters are rare, the nature of the ecological interactions between suckerfish and dolphins in the area remains poorly understood. The sharksucker *Echeneis naucrates* is known to be widely distributed in Brazilian waters (Carvalho-Filho, 1999; Sampaio & Nottingham, 2008) and, although not frequently observed in the area, it has already been registered for Baía de Todos os Santos, a tropical bay with calm waters in the state of Bahia, north-eastern Brazil, where the present record was made (Andrade, 2007; Lopes *et al.*, 2007). This work reports the first observation of a sharksucker associated with a young, rather than adult, Guiana dolphin, and for the first time, on the tropical coast of Brazil. We also hypothesize and discuss a novel case of host-fidelity for sharksuckers.

Materials and methods

The Guiana dolphin population inhabiting Baía de Todos os Santos (BTS; Figure 1) has been regularly monitored since 2010, with focal-follow methods from small boats. In early December 2012 and mid-January 2013, while searching for dolphins in the estuary of Paraguaçu River, north portion of the bay (12°51’S 38°49’W), the same group of Guiana



Fig. 1. Study area, indicating where observations were made (black triangle), at the Paraguaçu River mouth, Baía de Todos os Santos (12°51'S 38°49'W). The Cananéia estuary (black circle) is shown for reference.

dolphins was photographed while foraging (Figure 2). A sharksucker was observed and photographed attached to a young (i.e. small body size) dolphin on both occasions. Photos were examined and compared against bibliographic records for species identification (Carvalho-Filho, 1999; Santos & Sazima, 2005; Sampaio & Nottingham, 2008; Robertson & Van Tassell, 2019), and the record included in the database of Bio.Conserve Consultoria Ambiental, the NGO conducting the monthly monitoring.

Results and discussion

The first observation was made on 2 December 2012, at noon, when a group of seven adults and one juvenile Guiana dolphin were detected. The juvenile had a sharksucker attached to its dorsal region (Figure 2).

The second record was made 47 days later, on 18 January 2013, when the same juvenile dolphin was recognized as part of

a seven-animal group. Again, that dolphin was observed with a sharksucker attached to the same region of its body as during the first observation (Figure 3). The identification of the young dolphin was possible since it was closely associated with an adult on both occasions, likely its mother. The adult dolphin is a known female previously registered in the photo-identification catalogue of dolphins in the BTS (i.e. dolphin BFC#45).

The sharksucker was identified as *Echeneis naucrates* (CSL Sampaio, pers. obs.) using morphological characteristics (e.g. elongated body) and colour (i.e. black with clear line along the sides of the body, and the tips of dorsal, anal and caudal fins narrowly white; see Sampaio & Nottingham, 2008; Robertson & Van Tassell, 2019) and its known presence in the region (Andrade, 2007; Lopes *et al.*, 2007). Despite a closer examination of the specimen not being possible (i.e. the sharksucker was not collected), the observations made in the field and photos leave no doubt that the fish is in fact *E. naucrates*, and not a related species which does not occur in the area (CSL Sampaio, pers. obs.).

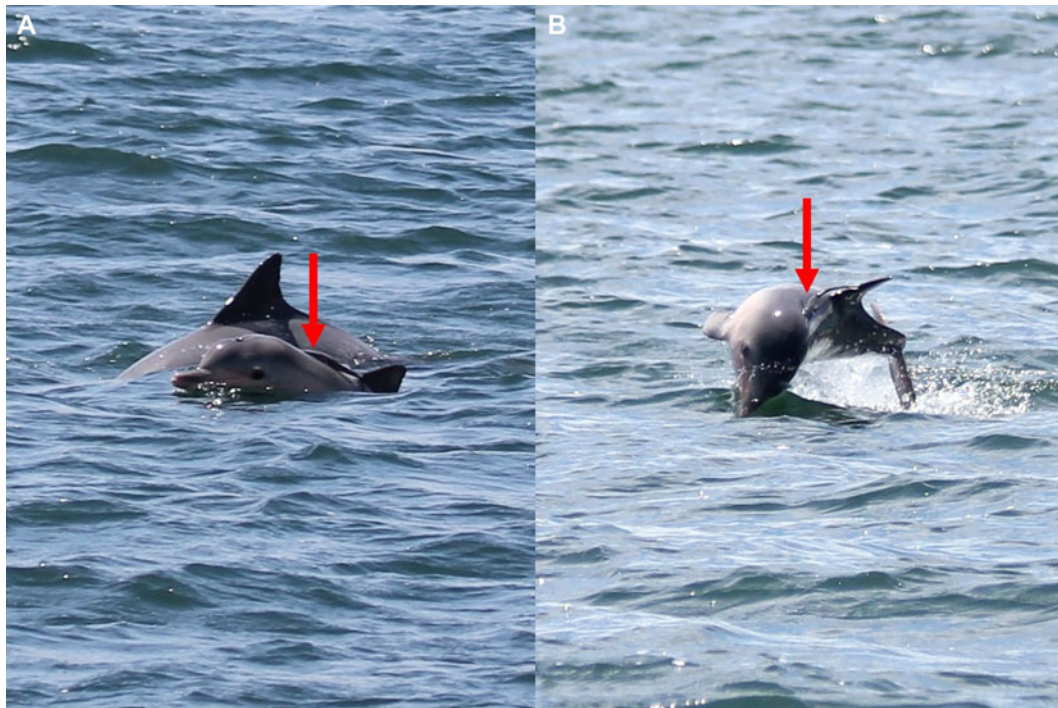


Fig. 2. Juvenile Guiana dolphin with a sharksucker attached to its dorsal portion during traveling behaviour (A) and during an aerial behaviour (B), on 2 December 2012. Red arrows indicate the sharksucker. (Photos: TEW Ross).

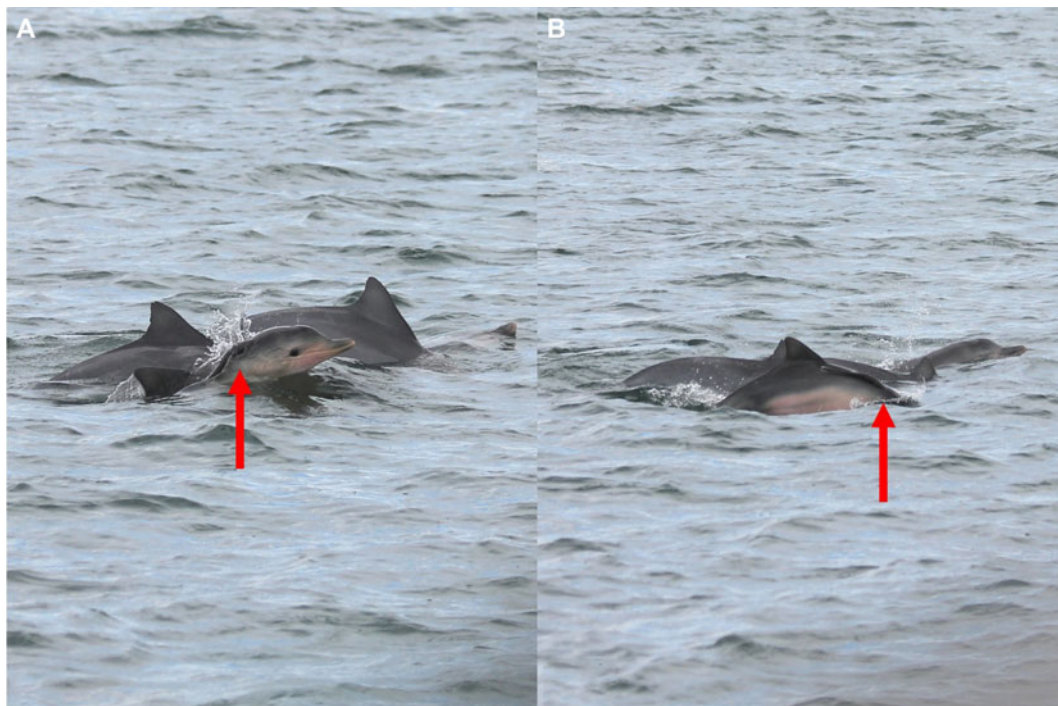


Fig. 3. Second encounter of a juvenile Guiana dolphin, 47 days after the first encounter. What appears to be the same sharksucker was attached to its body. Red arrows indicate the sharksucker. (Photos: LRA Souto).

Long-term studies and monitoring of *S. guianensis* in the BTS have been done for more than 10 years; still, the present association had never been observed (Spínola, 2006; Batista, 2008). No apparent behavioural signs indicating stress or irritation of the dolphin (Weihs *et al.*, 2007; Silva & Sazima, 2008) were observed.

The findings described here support the hypothesis that the sharksucker attached to the juvenile dolphin was the same individual in both cases (i.e. it was attached to the same body region,

in the same dolphin). Very little is known about host fidelity for *E. naucrates*, and in fact for suckerfish species in general. Brunnschweiler *et al.* (2020) present evidence of skin injury caused by a sharksucker attached to a blubberlip snapper *Lutjanus rivulatus* for a year. Furthermore, a whalesucker *Remora australis* was observed while attached to a spinner dolphin for a period similar to that observed here (about 1.5 months; Silva & Sazima, 2003).

For the entire distribution range of *S. guianensis*, a similar association was only described in an estuary region in south-eastern Brazil, and for an adult Guiana dolphin (Santos & Sazima, 2005). Although this is possibly the most studied cetacean species in Brazil, due to its high frequency of strandings (Di Benedetto & Rosas, 2003), wide distribution along coastal areas (Flores & Da Silva, 2009) and stranding networks effort all along the Brazilian coast, little is known about its interactions with other marine species. The present work is the first record of this association to the north-eastern region of the country. More information is needed to understand if such an interaction is a frequent event and if it is prevalent on younger dolphins and/or suckerfish. Understanding the nature of associations between suckerfish and Guiana dolphins may elucidate important ecological aspects of both species.

Data

All data generated or analysed during this study are included in this published article.

Acknowledgements. We are grateful to Adalberto Lúcio Portela Neto, Priscila N. Malafaia and Daniel S. Brasil de Souza, staff of Bio.Conserve Consultoria Ambiental Ltda, for their assistance on the monitoring of Guiana dolphin population at Paraguaçu River. Ivan Sazima provided critical idea inputs to this study. Biomonitoramento Ambiental Ltda provided logistical support during the data collection. Two anonymous reviewers provided important suggestions to improve this manuscript.

Author contributions. L.R.A.S. and M.S.S.R. secured funding for fieldwork. L.R.A.S., T.E.W.R. and M.S.S.R. collected the data. C.L.S.S. identified the fish species. L.R.A.S. and G.A.B. were major contributors in writing the manuscript. All authors read and approved the final manuscript.

Financial support. Fieldwork activities were funded by BioMonitoramento Ambiental Ltda. GA Bortolotto was funded by CNPq (PhD scholarship #208203/2014-1) during their contribution to this study. The funders were not involved in designing the study, in the data collection, analysis and interpretation, and in the writing of this manuscript.

Consent for publication. Not applicable.

Conflict of interest. The authors declare that they have no conflict of interests.

Ethical standards and consent to participate. Not applicable.

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